

B. DoD Technology Transfer Program

The DoD Technology Transfer Program is unique in the federal government because DoD is the primary customer of the technology being developed in our laboratories and through contracts for military items. Other Federal Departments develop technologies for private sector consumer use or other Department use. Because the DoD focus is on military requirements, there may be less opportunity for commercial applications; however, where appropriate, we continue to pursue suitable partners to engage in technology transfer efforts.

There are six specific areas of focus in the DoD technology transfer efforts in FY 2003:

1. Patents/Royalties/CRADAS
2. Conference and Tradeshows
3. Technical assistance provided to local and small business
4. Independent Research and Development (IR&D) to find partners for R&D efforts
5. TechLink and other Partnership Intermediaries under 15 USC 3715
6. Transferring technology in support of Homeland Security needs.

Each of these areas is discussed below followed by other ongoing activities, lessons learned, and the program plan for FY 2004.

1. Patents/Royalties/CRADAs

Appendix C is a spreadsheet with the specific data elements in response to P.L. 106-404, Section 10. This legislation requested information on plans for conducting technology transfer, plans for securing Intellectual Property (IP) rights in laboratory innovations with commercial promise, and plans for managing laboratory IP so as to advance DoD's mission and benefit the competitiveness of the U.S. industry.

DoD's investment in technology R&D is to ensure we can provide the military forces with the capabilities needed to deter war and to protect the security of our country. However, this R&D must be in a form which can be useful to forces i.e., in a product, system, or component part. One way to ensure technology usage is through licensing. Additionally, where possible, DoD would like to purchase from an economically viable industry which can produce items for both military and commercial applications. According to the Greater Washington Board on Trade's Report, *Technology Commercialization in Greater Washington: January 2004 Benchmark Study*, "Licensing...is a fairly robust indicator of the level of technology transferring out of research institutions and into the commercial sector."

The FY 2003 Senate Armed Services Committee Report accompanying the Defense Authorization Act for FY 2003 requested a report and plan on patenting and licensing DoD inventions with an emphasis on increasing the royalty income. Royalty income has increased and, as result, we are finding that the medical field is producing the largest revenue stream to DoD thus far. Royalties are used for other R&D efforts on technologies with commercial potential, inventor share, legal costs associated with world-wide patent applications, and other awards. We have completed this study and plan to submit to Congress after internal coordination is complete. In the meantime, we believe the following two charts show the trend in Patent License Agreements (PLAs) and the increase in royalty income as result of licensing DoD developed technologies.

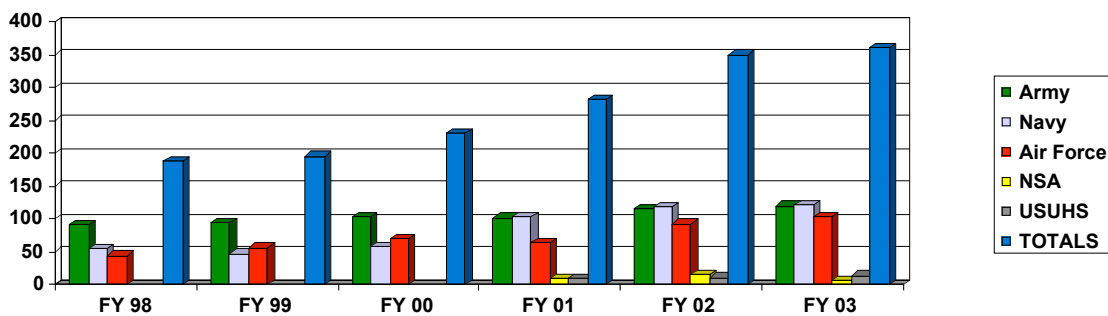


Chart 1: Number of PLA by Military Service/Defense Agency

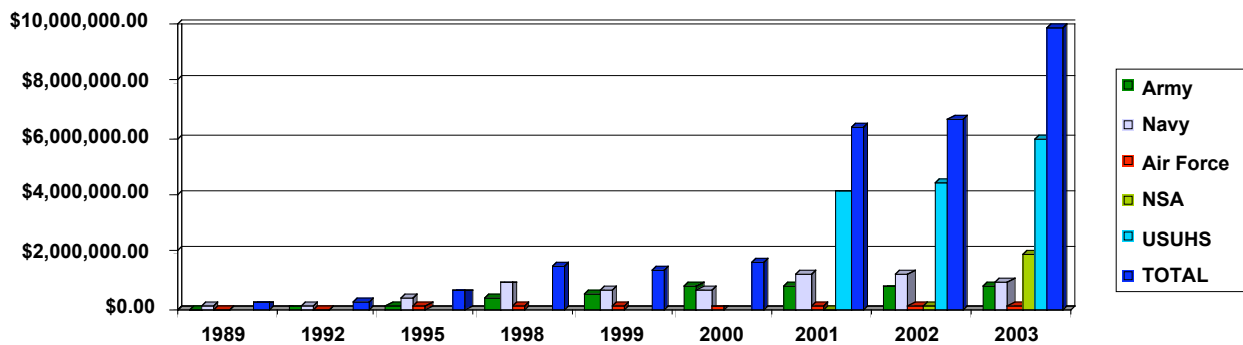


Chart 2: Royalty Income Fiscal Years 1989, 1992, 1995, 1998, 2000, 2001, 2002, 2003

Cooperative Research and Development Agreements (CRADAs) appear to be relatively stable in number after a rapid build-up in the 1990s and hover at around 2,000 active CRADAs per year. In FY 2003, DoD was actively engaged in 2,134 partnerships using CRADAs. CRADAs are agreements outside the Federal Acquisition Regulations with intellectual property (IP) protection for the private sector partner as well as the flexibility of working on joint R&D of technologies having both commercial and military applications. The appearance of a decline in the actual numbers of CRADAs from FY 2000 to FY 2002 is not a decline in usage; rather, this is a correction in the way Material Transfer Agreements from

one organization was reported previously. In some technical areas, CRADAs are the only tool used for research. For example, CRADAs are essential to conduct clinical research studies at Army medical treatment facilities. In CRADAs, federal government activities are allowed to accept funds from the private sector for joint research and/or development activities. The funds are used on the work covered in the specific CRADAs receiving the funds. This income is reflected in Chart 4 below.

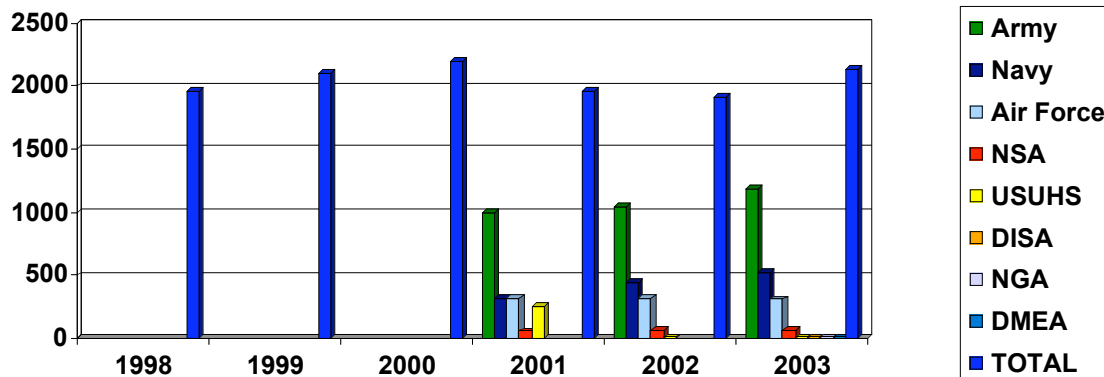


Chart 3: Number of Active CRADAs by Fiscal Years

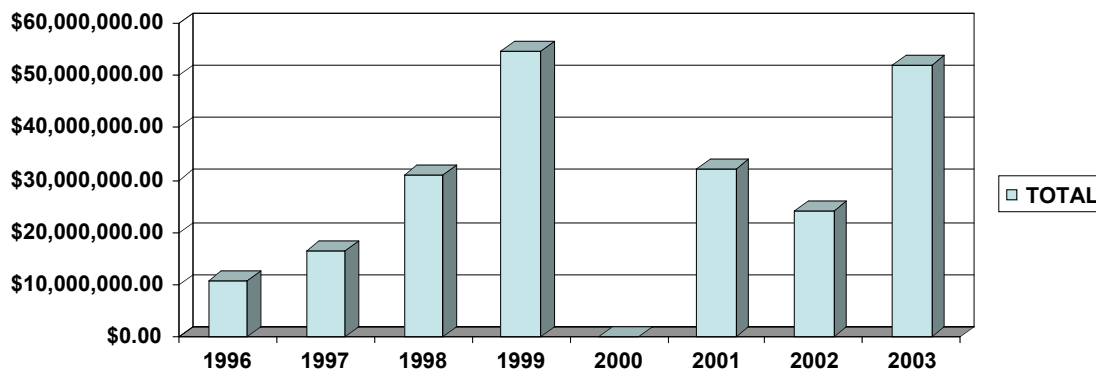


Chart 4: Revenue from Partners for Joint Development under CRADAs.

The DoD Technology Transfer Program is broader than patents, PLAs, and CRADAs. There are a variety of mechanisms which can be used. The combined number of technology transfer activities in FY 2003, identified by laboratory in Appendix B, includes PLAs, CRADAs, Facility Use Agreements, Personnel Exchange Agreements, and Educational Partnership Agreements.

2. Participation in Conferences and Tradeshow

DoD activities have participated in a wide variety of conferences and tradeshow with mixed results as far as the focus on transferring technology is concerned. Some have proven quite effective in showcasing technologies and finding partners interested in joint R&D efforts. Other conferences have not

proven as effective. We have reviewed and are now focusing on determining which conferences and tradeshow to participate in the future. Additionally, we are looking at who should attend these conferences and tradeshow. In some cases, the scientist may be the best source to have in contact with the private sector when trying to generate partnerships in specific R&D areas. However, the scientists need to know what tools are available (i.e., CRADAs) and how to use them if s/he represents the laboratory at conferences/tradeshow. Here are some specific examples of where conferences and tradeshow have been worthwhile:

- The Maryland Technology Development Corporation's (TEDCO) Federal Laboratory Partnership Program, whose goals are to create awareness of technologies available in Maryland federal laboratories, improve Maryland companies' technical skills, increase product development and prototyping for early-stage product development, and strengthen Maryland's economy. The program allows companies to reduce costs of technical assistance from the federal laboratories. TEDCO sponsored several conferences and tradeshow which were of value to DoD laboratories:
 - "Emerging Technologies and Opportunities: Bioscience, Health, and Medical Technologies" were the theme of the Army Research Laboratory". On March 26, 2003, this showcase was hosted by the Aberdeen Proving Grounds (APG) a featured presentation from five of the APG tenants (CHPPM) US Army Medical Research and Materiel Command, ARL, MRICD, and Edgewood Chemical and Biological Command. Some of the specific outcomes are:
 - There are 19 articles in the local media related to the showcase
 - 114 industry contacts
 - Ten companies contacts that have led to negotiations for partnerships and agreements:
 - One company moved to Maryland to be closer to APG for collaboration (Clear Energy).
 - One purchase order from Army to a company to develop technology for the Army.
 - One CRADA in place and another in final signature process
 - One awaiting a licensing opportunity and CRADA.
 - One company leased office space in Harford County.
 - One MOA in place between APG BDO and Emerging Technology Center (ETC) Incubator.
 - "Expand Your Horizons: Commercial Success with Department of Defense Technologies" was the theme of the Indian Head Technology showcase. This was held in May 22 at the Indian Head Pavilion. This was an all-day event with an opportunity for private industry and others in government to receive an up close look into the IHDIIV technologies

at capabilities with the express interest of working with IHDIV or transitioning its technologies into commercial applications. Some of the specific showcases are:

- Over 100 attendees
 - 63 industry concepts
 - Three company contacts that have led to negotiation for partnerships agreements.
- The Army Edgewood Chemical Biological Center (ECBC), the Naval Surface Warfare Center's Carderock Division, and the Naval Air Systems Command Paxtuxent River and Lakehurst Divisions have also participated in and benefited from technology showcases sponsored by TEDCO.
- Multi-state regional initiatives such as Strengthening the Mid-Atlantic Region for Tomorrow (SMART) continue to surface as concepts for partnerships and collaborations between the government labs, universities and industries. Many of the DoD laboratories in the mid-Atlantic region participated in the Delaware Tech Trends 2003 meeting sponsored by SMART. Although some relevant working groups exist in SMART, as with all conferences, participation is under review on annual basis.
- The Office of Naval Research (ONR) sponsored the Naval-Industry R&D Partnership Conference in August 2003. Their focus is to: expand understanding of Naval transformational capabilities and initiatives, learn about technological needs of today's Navy and Marine Corps, acquire insight into the Naval transformational technologies, network with key stakeholders in the Discovery to Deployment Process, hear about the "best-of-the best" ONR-sponsored technologies, gain knowledge of some of the innovative business practices on-going and planned with the DoD and Department of the Navy, and increase the prospective for matching commercial technology with emerging Naval needs. A pre-conference workshop, entitled, "Doing Business with the Navy 101", introduced various means of working with the Navy. Topics included were: contracts, grants, other transactions, security processes, CRADAs, Commercial Service Agreements, PLAs, Navy Acquisition, Research and Development Center (NARDIC), and opportunities for small business through the SBIR/STTR program and the Small Disadvantaged Business Utilization Office. A video of the session is included in the conference proceedings CD-ROM set.
- The Office of Naval Research-Pearl Harbor, the FLC Far West and Mid-Continent regions, the Pacific International Center for High Technology Research, and the State of Hawaii Department of Business, Economic Development and Tourism teamed for the TechEnterprise 2003 conference. This collaboration offered the opportunity to explore Hawaii's technology

programs and companies, to become familiar with ONR's vast fields of expertise and resources, and to expose opportunities available within the federal laboratories.

- The Air Force participated in a wide variety of conferences, some of which were to promote technology transfer, and some were to remain current in a technical area. Here are samples of these conferences: World Aviation Congress, 19th National Space Symposium, Global Air & Space, National Aerospace and Technology Conference, SAMPE International Symposium & Exhibition, SAMPE Technical Conference, Air Force Association Technology Exposition, AeroMat 2003, 7th Joint FAA/DoD/NASA Conference on Aging Aircraft, National Center for Manufacturing Sciences (NCMS/CTMA) and the U.S. DoD partnership Conference National Aeronautical Systems and Technology Conference, Manufacturing Conference, and the National Space & Missile Material Symposium.

3. Technical Assistance to Local and Small Businesses

DoD activities have worked with a variety of partners in seeking to transfer technology for both military and commercial use. We have worked with other Government Department laboratories; small, medium, and large private sector entities; and with the academic communities across the United States. We have found that to be most effective, some "hand-holding" is required to ensure small and medium businesses can get full value from the technology we are transferring. Therefore, we have undertaken specific technical assistance activities in support of transferring the technology. Some of these activities are:

- Lakehurst has employed 10 USC 2667 out-leasing authority to create a partnering agreement with Ocean County Vocational – Technical School, Career and Technical Institute. The following are examples of the success of this partnering agreement:
 - The vacated "temporary" building that was used as a Child Development Center is now used for a nursing program.
 - The abandoned Officer's Club is now used for a Culinary Arts Program which offers specially prepared meals to base personnel.
 - A newly renovated 43,000 square feet of hanger space for classrooms.
- The Army Aviation and Missile Research, Development, and Engineering Command's RD&E Center is a participant in the National Institute of Standards and Technology's Manufacturing Extension Partnership (MEP) Program in the State of Alabama as a technology resource. This allows the MEP Center to draw on technical assistance for local, small manufacturing firms.

- The Naval Undersea Warfare Center Division Newport (NUWCDIVNPT) has an umbrella CRADA with the Slater Center for Marine and Environmental Technologies (formerly the Slater Center for Ocean Technology). The Slater Center interacts with companies in Rhode Island and the northeast providing business development information and grants. Under this CRADA, the Division is able to give technical assistance to Rhode Island companies. NUWCDIVNPT works with the State of Rhode Island economic policy and technology councils to further assist the development and growth of the Rhode Island technology business base through CRADAs, technical assistance, and PLAs. NUWCDIVNPT also provides technical assistance to businesses in Connecticut and Massachusetts.
- As an example of day-to-day interaction, the Air Force Research Laboratory (AFRL) Material and Manufacturing Directorate received over 741 contacts via phone or e-mail in FY 2003 requesting technical assistance. These are primary calls to the technology transfer personnel who then directed the request to the appropriate personnel within the laboratory for assistance.
- The Naval Surface Warfare Center Dahlgren Division, both the Dahlgren site in Virginia and the Coastal Systems Station in Florida, provide technical assistance in response to state and local government requests.
- The Missile Defense Agency (MDA) has organized two specific technical assistance activities to ensure the new technologies have the best opportunity for use.
 - MDA Business Focus Workshops (BFWs) help technology entrepreneurs with Phase I MDA Small Business Innovation Research (SBIR) contracts to: (1) think through the process of transforming a technical development into product revenue. (2) place the SBIR project objectives in context with the company's business objectives, (3) make a credible business case, and (4) get realistic and supportive feedback on how to proceed. The BFW is an intensive, one-day meeting. After an introductory session with the entire group, each SBIR company is teamed with an NTTC commercialization engineer and a business consultant. Each team works independently for about four hours, covering a detailed topic list of business development issues. After this session, the company prepares a four-chart presentation that concisely summarizes the business case for their technology. The day concludes with each company presenting the charts to the entire group and receiving targeted feedback. The number of BFWs this year increased significantly as allowed by the Program budget and the increased number of Phase I awardees. Since January 2003, MDA sponsored seven BFWs regions held in Alexandria, VA; Phoenix, AZ; and Los Angeles, CA. At these meetings, in total, 74 companies were assisted.

- MDA Technology Applications Reviews. Technology Applications (TA) reviews is held two to five times each year to help MDA-funded researchers with innovations in the prototype stage of development commercialize their technologies. At these reviews, inventors present their technology from a commercialization perspective in a forum approach. A panel of 15 to 20 volunteer reviewers, expert in areas such as venture capital, intellectual property, and strategic partnerships, provide advice and business contacts. Unique to these reviews is the caliber of “advisors” who participate without compensation. The combined business acumen and collective technical experience of this group is essentially a “board of advisors for a day,” a board that neither these companies could afford nor could the government provide from internal resources. Reviews are held regionally throughout the United States. In FY 2003, MDA sponsored three TA reviews that assisted 16 MDA-funded research efforts. Reviews were held in Arlington, VA; Alexandria, VA; and San Diego, CA.

4. Use of IR&D Information for R&D Partnering

Review of the IR&D database is required by DoD entities seeking to start new research projects. This is required to reduce potential R&D costs when industry may be doing research in a specific area or have completed research on the topic of interest. Searching the IR&D database also allows our scientists and engineers to begin thinking in a mode that will seek out collaborative relationships and leverage resources. Use of the IR&D database is becoming more prevalent in the search for partners in R&D within DoD. As one laboratory explained, “The IR&D program is also a contributor to technology transfer activities as it serves to inform government technologists about the progress and relevance of industry-initiated efforts that [could] support the DoD.” Here are some specific examples:

- RDECOM CERDEC conducted 17 technical interchange meetings with private industry in FY 2003 and found them to be an excellent technology leveraging opportunity between government and private industry. One success story is with General Dynamic C4Systems: a technical interchange meeting resulted in a CRADA covering communications, command and control, and homeland security. One successful outcome is the establishment of a joint group between RDECOM CERDEC and General Dynamics to work S&T initiatives weekly with meetings between engineers.
- The U.S. Army’s Benet Labs/Watervliet Arsenal in New York and Picatinny Arsenal in New Jersey as well as the Naval Air Warfare Center Aircraft Division Lakehurst have worked with the local community to establish business and technology partnership Centers on site. These are not-for-

profit organizations with a mission to transform the site into a center for technological and business excellence. These partnerships provide assistance with: location services, interface with the military organization, economic development assistance, and problem solving. In searching for companies to partner with for these Centers, the military organizations have searched the IR&D database to find companies with similar research interests to that occurring within the local military activity and approached them about these joint efforts. Both military and local, civilian needs are satisfied within these Centers.

5. TechLink and other Partnership Intermediaries

For the past several years, this annual report has discussed the usefulness of partnership intermediaries and has highlighted the DoD partnership intermediary, TechLink. This report continues this trend because TechLink is an integral part of the way DoD conducts its technology transfer efforts and because TechLink uses a “technology pull” approach in seeking technology transfer opportunities. We are including information on a few other partnership intermediaries this year in addition to a discussion on TechLink.

TechLink

TechLink has been highly effective at identifying prospective licensees for DoD-developed technologies and at facilitating PLAs between DoD labs and companies for these technologies. One major reason for this success is TechLink’s “technology pull” or “market pull” approach.

Many technology transfer centers employ “technology push,” in which they market their sponsoring organization’s intellectual property by posting licensing opportunities on their web sites, staffing booths at trade shows, convening “industry days” that feature their technologies, or engaging in direct mail campaigns. By contrast to this technology-push approach, TechLink begins by identifying industry needs. This is done in two ways:

- (1) In the Northwestern United States, TechLink makes a concerted effort to understand the key technology needs of specific companies. Then it seeks DoD technology to satisfy these company needs. This involves mining the entire DoD patent database to find suitable licensable technology. Alternatively, TechLink seeks the desired technology in DoD labs that have widely recognized strengths in the relevant technology fields. In essence, TechLink “pulls” technology out of the DoD lab system to meet specific industry needs. This effort is enhanced by TechLink’s specialized expertise in nine different industry areas.
- (2) TechLink also evaluates new licensable DoD technology for innovativeness, stage of development, and commercial potential (which is recognized, in part, by staff’s familiarity with regional industry needs). When

TechLink has identified technology that is unusually strong in all three areas, it conducts extensive research nationally to identify the most promising commercialization partners. Prior to contacting each potential licensee, it develops a business case for the technology, focusing on how licensing this technology would help the company to achieve its business goals.

If TechLink staff members cannot find a match between company needs and DoD technology, they register the relevant data in a proprietary database and continue scouting. This database assists TechLink in matching technology needs with technology availability in the future. TechLink seeks to develop trusted relationships with both DoD labs and industry that lead to repeat patent-licensing opportunities.

In summary, TechLink's technology-pull approach is market-focused. While this approach to licensing DoD-developed technology is labor-intensive, it is effective because it is based on meeting key technology needs of specific companies.

Other partnership intermediaries supporting DoD technology transfer efforts are:

- The Defense MicroElectronics Activity ORTA works closely with the Sacramento based Federal Technology Center (FTC) in Sacramento, California, which is a non-profit California Corporation established to benefit the public by facilitating federal technology transfer and technology-based economic development in the Sacramento Region. The FTC serves as an intermediary between DMEA and local businesses and educational institutions to facilitate and maintain technology transfer and small business partnerships. [The mission of The Federal Technology Center \(The FTC\) is to promote economic development by facilitating technology transfer between government and the private sector, and by helping small businesses successfully compete for government contracts.](#) Major General Alice Astefan (Air Force, retired) is CEO of the FTC.
- A Partnership Intermediary and cooperative relationship has been established between the Navy Indian Head Division (IHDIV) and TEDCO to develop a more effective outreach program for small businesses, state agencies, and academic institutions to expand inter-utilization of technology and facilities of IHDIV. TEDCO will direct efforts to identify and solicit appropriate CRADA partners, from among the state small businesses and academic community, for direct collaboration with IHDIV. IHDIV will provide technical research, development, testing, and engineering activities, under a CRADA, with Maryland small business firms and educational institutions.
- IHDIV has a partnership intermediary agreement with the Municipality of Indian Head, Maryland. Under this PIA, IHDIV will identify to the

Municipality of Indian Head its inventions that are available for licensing. The Municipality of Indian Head, with the assistance of appropriate State organizations such as the Maryland Department of Business and Economic Development, will attempt to locate and identify to IHDIV small businesses within its area of responsibility that have an interest in licensing IHDIV Inventions. IHDIV will engage in discussions with these interested businesses with a view toward reaching a Patent License Agreement. Such discussions and any resulting Patent License Agreement will be accomplished in full accordance with all applicable Federal laws and regulations. The Municipality of Indian Head may choose to provide such other assistance to interested small business as is consistent with its enabling legislation and municipal ordinances. All the efforts by both Parties are ultimately directed toward new business development opportunities, and the creation of new jobs.

- The Air Force Research Laboratory's Information Directorate at Rome, New York, has a partnership intermediary, New York State Technology Enterprise Corporation (NYSTEC), to assist in determining market demand for highly marketable technologies and to assist in licensing opportunities. The interface between AFRL/IF and NYSTEC provides one avenue to work with the NY state Office for Technology and the state Emergency Management office for homeland defense/security applications of AFRL/IF technologies.
- The Air Force Research Laboratory's Space Vehicle and Directed Energy Directorates at Kirtland Air Force Base in Albuquerque, New Mexico, utilize the New Mexico Institute of Mining and Technology (Tech) as its' Partnership Intermediary. Tech, under a joint powers agreement with the New Mexico State Department of Economic Development, was designated as the lead agency for technology transfer conversion for all public and private sector organizations within the state. This partnership intermediary brings to the ORTA an outside professional economic development perspective with over 125 man-years of economic development and technology commercialization experience to tech transfer that includes:
 - Assessing the financial viability of potential CRADA partners and patent licensees;
 - Reviewing, in conjunction with the ORTA, the necessary documentation required relative to CRADAs, patent disclosures, applications and licensing of patents with public and private sector organizations;
 - Identifying, in conjunction with the ORTA, other technology transfer objectives, that may be incorporated into the technology transfer plan;

- Screening technical assistance requests from businesses to VS for referral to appropriate national, regional, state and local government organizations involved in fostering business development; and
- Supporting the development and implementation of the business and marketing plan to aggressively find matching funds for the marketing and promotion of AFRL/VS programs and activities.

6. Transferring Technology in Support of Homeland Security Needs

This report is on the activities of the Office of Technology Transition and documents some of the programs in transferring technology both to the private sector and for military application. This section does not provide the totality of what is happening in the Department of Defense to support the Department of Homeland Security nor specific activities in assisting local communities respond to emergencies. Rather, this section provides some examples of what is happening across the Department to support first responder use of DoD technologies and make capabilities available at the local first responder level. Here are some of these examples:

- The Army's Edgewood Chemical and Biological Command (ECBC) maintain a number of relationships with other Government Agencies (OGAs), federal and state, which involve the exchange of technological expertise and capabilities. Such relationships are administered through different types of documents, including Memorandum of Agreement (MOA), Memorandum of Understanding (MOU), Interagency Agreement (IAA), and Inter-Service Support Agreement (ISSA). Eighteen new agreements with OGAs were initiated in FY 2003, with 11 additional agreements active. While these agreements are not traditionally considered the venue for the technology transfer program, significant results were obtained in transferring technologies developed by ECBC for military defense applications to the new homeland security objectives, thus resulting in both enhanced public safety and savings.
- The U.S. Army Space and Missile Defense Command (USASMDC), located in Huntsville, Alabama, signed a Memorandum of Understanding with the City of Huntsville to facilitate potential transfer of USASMDC-developed technologies for homeland security applications.
- The USASMDC Battle Lab is working under a CRADA with Quantum Research, Inc., to develop a prototype rapid disaster response civil communications and coordination capability. This agreement also will be used to transfer technological innovations to specific disaster response and homeland security applications outside DoD.
- The U.S. Army's Natick Soldier Center's National Protection Center (NPC) has been an integral part of a CRADA with the Oklahoma City Memorial

Institute for the Prevention on Terrorism (MIPT). The effort addresses research and development of thermoelectric cooling and battery technologies for future integration into a cooling garment for public safety and emergency response operations. The NPC is serving as MIPT's Technical Program Manager for a contract being awarded by MIPT to a team lead by Oklahoma State University. NSC subject matter experts provide technical support and expertise to this team. Additional benefits include ongoing NSC protective clothing and equipment research and development programs are leveraged by this effort.

- The Naval Air Systems Command Weapons Division Point Mugu is working with Capital Broadcasting Corporation via a CRADA to investigate coordination of communication with state and local governments, private industry, and the public about threats (terrorism), natural disasters, and preparedness when practical.
- The Navy Clothing and Textile Research Facility are supporting our ability to make available new products for homeland security needs. They are working with private sector companies to test a variety of capabilities, including evaluation of the Wireless Firefighter Ensemble and testing to establish data to be used as a heat stress predictive model.
- The Naval War College technology transfer activities during 2003 have focused again on national security issues, specifically homeland defense. Through the use of various facilities, expertise, and technologies, the War Gaming Department (WGD) has established a reputation for assisting state and local government agencies by applying military thought processes to the understanding, analysis, and improvement of domestic preparedness plans. Agencies have been subjected to simulated events that stress the implementation and mechanics of their plans. In turn, the Department has benefited by increased awareness of issues confronting agencies in their efforts to prevent or respond to acts of terrorism against the United States. WGD military partners include the Navy, the joint community (e.g. JFCOM, MSC), as well as the other Services. WGD non-military partners are principally civilian homeland security and defense agencies at the municipal, state, and federal levels. The example include:
 - Federal Emergency Management Agency (FEMA) Region I5
 - National Guards of the Northeast states
 - Rhode Island and New York City Emergency Management Agencies
 - The senior elected leadership, specifically the Mayors, of Providence and New York
 - Municipal first responders, e.g. fire and the police departments.

- Engineers at the Air Force Research Laboratory Materials & Manufacturing Directorate have developed a deployable, lightweight vehicle that provides crash and rescue firefighting capability in a variety of mission profiles. The First Response Expeditionary (FRE) Fire Vehicle, developed to meet Air Combat Command and Civil Engineering requirements, has already established its value during Operation Iraqi Freedom, when several of the units were deployed to protect helicopters, aircraft, tent cities, and other bare base operations. (See Appendix D for photograph and additional information)
- The AFRL Space Vehicles Directorate has a CRADA with KOB-TV for the Pinpoint WeatherNet Project (PWN). PWN provides high quality weather stations for New Mexico middle schools. In FY 2002, PWN became part of the Homeland Security WeatherNet Network, a partnership between the National Weather Service and Automated Weather Source.

Other Ongoing Activities in FY 2003

Ongoing activities in which DoD worked in FY 2003 and are continuing into FY 2004 include the following groups, projects, and systems.

Defense Technology Transfer Working Group (DTTWG)

The DTTWG was established in 1994 and is comprised of representatives from each of the Military Departments and most of the Defense Agencies. This group meets monthly to review technology transfer issues requiring either consistent policy or approach from a joint DoD perspective. Two of the areas addressed this year are:

- First Responder Technology Transfer Initiative
- General Accounting Office data collection

DoD Technology Transfer Integrated Planning Team (TTIPT) Workshop

The seventh DoD TTIPT Workshop was held in November 2002. Over one hundred technology transfer professionals gathered to discuss joint projects, best practices, lessons learned, and to hear about new legislation and information sources that will affect current technology transfer efforts. Each Military Department provided an update on its technology transfer program implementation. The DoD partnership intermediary (TechLink) discussed how they are supporting technology transfer activities. Also highlighted were the use of Small Business Development Centers, a discussion on the changing role of technology transfer as it supports acquisition, training sessions on technology transfer basics and mechanisms, best practices in valuation, structuring licenses, marketing, and commercialization strategies, and legal issues. Additionally, roundtable discussions were held on three topics: the role of the ORTA, and

what the position description should contain, patent office fees and other legal issues, and evolving DoD policy in technology transfer.

Interagency Working Group on Technology Transfer (IAWG/TT)

The three Military Services and DoD continue to participate with the other Federal Departments and Agencies on the IAWG/TT chaired by the Department of Commerce. This working group has looked at technology transfer implementation in the various federal departments, how it varies based on Agency mission, and what we can learn from each other to improve our programs. The IAWG/TT has proven to be an effective mechanism for discussions among the Federal Departments and Agencies and for identifying ways to showcase success in technology transfer activities.

Federal Laboratory Consortium for Technology Transfer (FLC)

The Military Departments and Defense Agencies have been participating in the FLC since its inception in 1974. Participation is achieved through financial support, participation in annual National FLC meetings, serving as FLC Executive Board members and/or Committee Chairs, and actively supporting interagency laboratory projects. The FLC provides an opportunity to share information with other Federal Agency technology transfer professionals and learn about methods employed in other agencies that could benefit DoD.

The FY 2002 DoD financial payment for the operation of the FLC as specified in 15 USC 3710(e)(7)(A) was \$702,696 and in FY 2003, DoD's contribution was \$752,038. We are working closely with the FLC to ensure DoD obtains value for this investment.

The FLC presents Annual Awards for Excellence in Technology Transfer to recognize laboratory employees who have done outstanding work in the process of transferring lab-developed technology. Nominations are made by the laboratory representatives and are judged by a panel of experts in the field of technology transfer. The FY 2002 Department of Defense winners of the Award for Excellence in Technology Transfer are identified along with a description of their technology in Appendix E. Additionally, Appendix E identifies the Laboratory Director of the Year, Mr. Brian Simmons, from the U.S. Army Developmental Test Command; the FLC Service Award winners (all from DoD): Harold Metcalf Award for sustained significant service to the FLC, Mr. Richard Dimmick; Representative of the Year for the most significant contribution to the FLC program, Mr. Patrick Rodriguez; and the Outstanding Service Award for notable contribution, Ms. Mary Weiss. A new award was given in FY 2002, the FLC Innovative Partnership Award was presented to Dr. John Dinan from the U.S. Army Communication-Electronics Command, Research, Development and Engineering Center for showing the greatest commitment to the long-term results of technology transfer.

DoD representatives serve in both elected and nonelected positions with the FLC. These leadership functions facilitate sharing of information with other Federal Departments and Agencies and contribute to specific technology transfer activities. The following DoD personnel hold positions in the FLC in FY 2003:

| FLC Position | Name/Organization |
|--|---|
| FLC Chair Chair, Planning and Policy Committee Chair, Nominating Committee | Ed Linsenmeyer, Naval Surface Warfare Center, Coastal Systems Station |
| Chair, Program Committee | Norma Cammarata, Army Research Laboratory |
| Chair, Legal Issues Committee | Robert Charles, Army Medical Research & Materiel Command |
| Recording Secretary | Geoff Phillips, Defense MicroElectronics Activity |
| Coordinator, Northeast Region | Hans Kohler, Naval Air Warfare Center, Aircraft Division, Lakehurst |
| Coordinator, Mid-Atlantic Region | Dr. J. Scott Deiter, Naval Surface Warfare Center, Indian Head Division |
| Coordinator, Southeast Region | Kelly McGuire, Army Aviation and Missile Command RD&E Center |
| Coordinator, Far West Region | Kurt Buehler, Naval Facilities Engineering Service Center |
| Deputy Coordinator, Northeast Region | Hans Kohler, Naval Air Warfare Center, Aircraft Division |
| Deputy Coordinator, Mid-Atlantic Region | Henry Strunk, Naval Surface Warfare Center, Carderock Division |
| FLC Executive Board Member-At-Large | Sharon Borland, Army Cold Regions Research and Engineering Laboratory |
| FLC Executive Board Member-At-Large | Soheir Ibrahim, Army Yuma Proving Grounds |
| FLC Executive Board Member-At-Large | Mary Weiss, Defense Technical Information Center |

In addition to the above positions, Mr. John Todaro, Director, Office of Technology Transition, Office of the Deputy Under Secretary of Defense (Advanced Systems and Concepts) is serving on the National Advisor's Board to the FLC.

Websites

Each of the Military Services, Defense Agencies, and Office of the Secretary of Defense maintain technology transfer websites to inform the public and make available general information on this program. These websites provide information on how to contact the ORTA for technology transfer opportunities, training, success stories, and mechanisms and agreement examples to facilitate joint research and development efforts and transfer technology to the private sector. These websites are:

<http://www.dtic.mil/techtransi>

<http://www.arl.army/tto/adtt/>

http://www.onr.navy.mil/sci_tech/industrial/tech_tran/how_help.htm

<http://www.afrl.af.mil/techtran/index.htm>

<http://www.acq.osd.mil/bmdo/bmdolink/html/transfer.html>

<http://www.nsa.gov/programs/tech/index.html>

In addition, the Office of Naval Research has launched Phase I of a new website, <http://www.navytechmatch.com> to promote interactions between the Navy, industry, and academia. Developed in collaboration with the West Virginia High Technology Consortium Foundation, the site includes Navy patents available for licensing and Navy facilities in a concise searchable format. The next phase will bring in opportunities to work with the Navy and successful partnerships. Our future plans are to expand the site to include the other Military Services and Defense Agencies.

FY 2004 Plan for Conducting Technology Transfer

Technology transfer is more than giving industry access to DoD's technologies. It includes working with industry to ensure the transfer occurs in a way that makes the technology usable and is available in the future to meet DoD needs. Part of the success of DoD technology transfer efforts is the need to review lessons learned and apply them as we move forward. In our last report, we identified specific lessons learned and we used these to improve our technology transfer activities.

Key Lessons Learned in FY 2002 and FY 2003

We review technology transfer activities at least annually to find what is working well, both from a process and procedural as well as technical capability standpoint. Some of the lessons learned are:

- We need to more carefully review the credentials and technical capabilities of companies seeking to enter into partnering agreements, especially small businesses and foreign entities to ensure they are capable of performing at the necessary level.
- Cooperative research can leverage the private sector work in technologies that are the key to Transformation.
- CRADAs should not be written so broadly that intellectual property can be lost.
- Technology transfer should be used strategically versus tactically in the organization's overall investment strategy. We need to integrate technology transfer activities into the entire business and laboratory processes.
- Technology transfer programs need to be integrated into technical activity roadmaps to bridge resource gaps, to leverage available resources, and to assist in identifying commercial applications for the technology. Multiple uses of a technology build an industrial base that should lower the acquisition cost for military applications.
- The ORTA must be familiar with lab technologies as well as commercial businesses to fully understand the potential for Technologies—only then can successful leveraging occur.

- Coordination of Intellectual Property through the ORTA is slowly improving.
- Analysis of the patent portfolio should be a continual process.
- There is a need to affirm IP protection as a priority (e.g. disclose first—publish after) philosophy is to replace publish or perish mentality. Patents should have at least equal status with publishing. IP is critical to most past, current, and future technology transfer and dual use activity.
- In reviewing quality indicators for this program, looking at revenue from the technology transfer agreements does not take into account the in-kind R&D services and “spin-on” technologies thus obtained by the Government through these collaborations, but it does provide an objective metric.
- Operational tempo for many of our laboratories/technical activities continues to be exceedingly high; therefore, information and processes associated with technology transfer must be succinct, targeted, effective and efficient.
- There must be a clear linkage between every technical effort and user requirements. Increasingly technology transfer programs are integrated into the technology roadmap and resource gaps are readily apparent. Senior leaders and experienced program managers are increasingly savvy about the potential for T2 tools such as CRADAS, partnerships, etc., as a means of bridging these gaps.
- The Office of Naval Research sponsored an Innovation Intellectual Property Training Project at the Naval Surface Warfare Center Carderock Division in FY 2003. Innovation Business Partners, Inc. facilitated four teams in deploying commercial business practices to solve naval technical problems. By defining and following a set of procedures to leverage intellectual property in the U.S. Patent and Trademark Office, the teams produced nine invention disclosures and one product acceptance plan to test the viability of an existing commercial solution. All of this in the two month span of this short-term pilot.

As we seek to include these lessons learned into our activities, we continue to pursue joint efforts with the private sector. Part of this effort to work jointly is an awareness campaign. There are private sector opportunities but, because the laboratory capabilities are not known, these opportunities don't occur. And, there are opportunities from within the laboratories/technical activities that do not occur because many of our scientists, engineers, and other employees are not aware of the tools available to facilitate these joint efforts. We are actively performing outreach and in reach activities -- out to the private sector and into our staff. These outreach and in reach activities include:

- To the private sector: newly patented technologies are advertised in a variety of publications, including the “Federal Business Opportunities” for potential licensing. Information packets on many of these technologies also are mailed to companies identified as having potential interest in specific technologies.
- To the laboratories and technical activities: we will provide training sessions to technicians, technologists, engineers, scientists, and management.

Future

We plan to continue seeking to make technology transfer an integral part of the planning process so we can maximize the effectiveness of our S&T program. We intend to deliberately participate in value-based, mission-related technology transfer activities that derive value to the Department and for our partners. We are seeking to ensure every DoD activity uses technology transfer mechanisms strategically to manage field level R&D. Leveraging resources is a key benefit of technology transfer activities within DoD.

We anticipate submittal of our report and plan on patenting and licensing DoD inventions with an emphasis on increasing the royalty income and to be more aggressive in marketing DoD-owned IP as requested by the FY 2003 Senate Armed Services Committee Report accompanying the Defense Authorization Act for FY 2003.

Cooperative activities with other federal departments, the private sector, and Congress are ongoing within DoD. We anticipate these efforts continuing, including participation in the conferences and tradeshow discussed above.

A new effort in FY 2004 is partnering with the Department of Commerce (DoC) Manufacturing Extension Partnership (MEP) program under the leadership of the National Institute of Standards and Technology. We believe this offers a significant opportunity to provide support to small businesses developing manufacturing capabilities around DoD technologies as well as the capability to assist these companies provide new products to DoD. The main objectives of the Memorandum of Understanding (MoU) between DoD and DoC will be to accelerate the transition of technology to the commercial industrial base, establish a rapid response defense manufacturing supply chain, reduce manufacturing costs, and expand the supplier base for surge requirements. Leveraging DoD’s expertise and MEP’s national service delivery network will more efficiently use U.S. tax dollars to advance defense capabilities and strengthen the U.S. economy.

Increasingly, we’re doing technology transfer not because it is legislatively mandated, but because it enables the mission and are a good business practice. We note that, in support to our warfighters, many times technologies that are

currently being deployed were developed using technology transfer mechanisms. Here are a few examples:

- The U.S. Army Tank Automotive Research and Development Center (TARDEC) Mobile Parts Hospital employs technology originally developed under a CRADA and have been deployed to Kuwait for fabricating and repairing automotive and other parts that have been lost or damaged.
- The U.S. Army's Electronic Proving Ground developed the Modular Covert Remote Electronic Warfare Simulator (MCREWS) which now has interest from the other Military Services. It was developed as a developmental test tool but is now being applied to the training needs of the U.S. Marine Corps.
- Under a CRADA with American Ordnance LLC, IHDIV develops explosives, explosive processing methods and explosive loads for Navy weapons systems. American Ordnance has a contract with the Army to run government owned explosive production facilities and will be setting up a cast-PBX explosive loading capability for the development and deployment of insensitive explosive loads for the DoD. IHDIV will assist American Ordnance in setting and proving out the new capability.

We anticipate these focused efforts to enhance our transfer opportunities and provide increased technical capabilities available for the warfighter – the ultimate customer of DoD's technology investments.